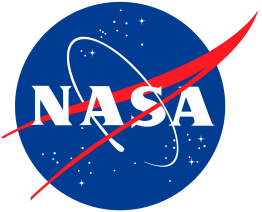


# Using scatterometer-measured vector winds to study high-impact weather events



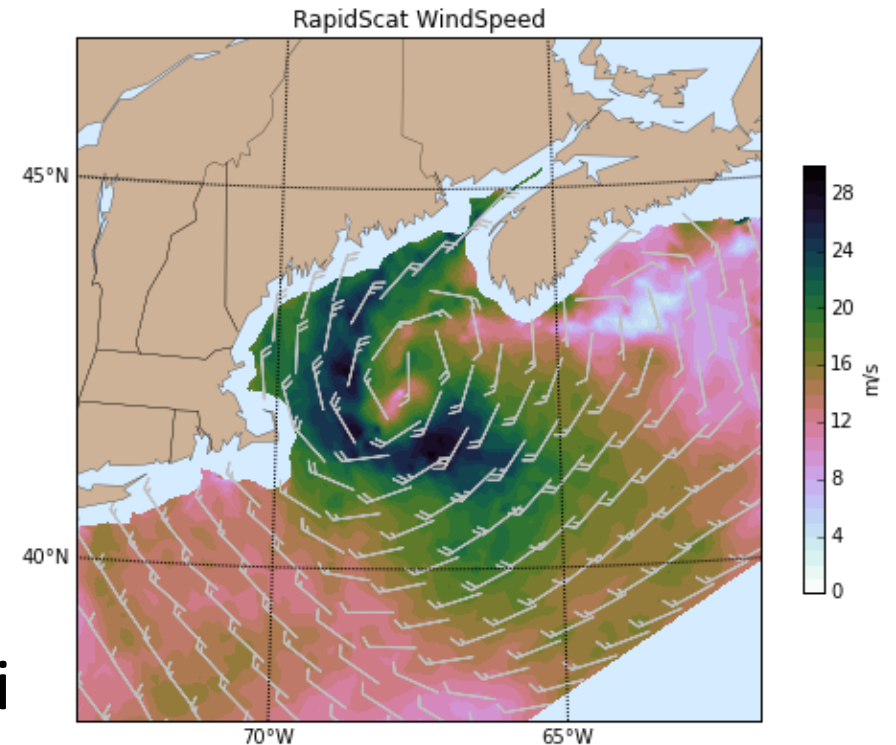
Timothy Lang



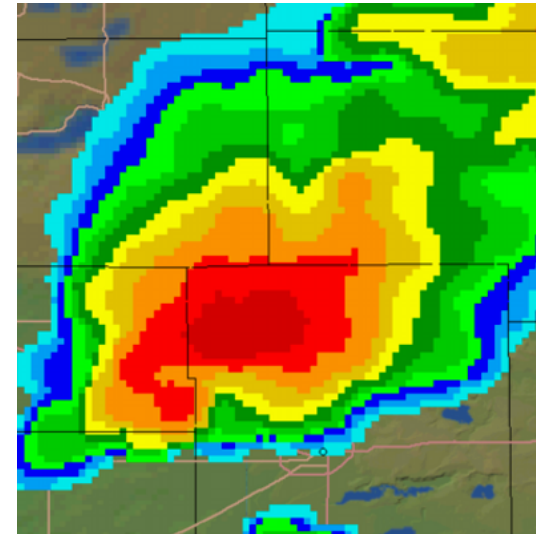
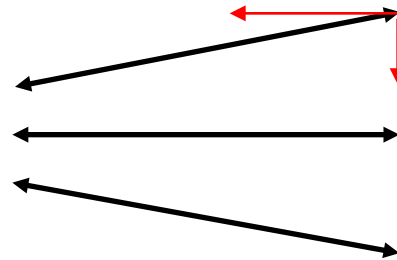
George Priftis, Themis Chronis



Steve Nesbitt, Piyush Garg, Stella Choi

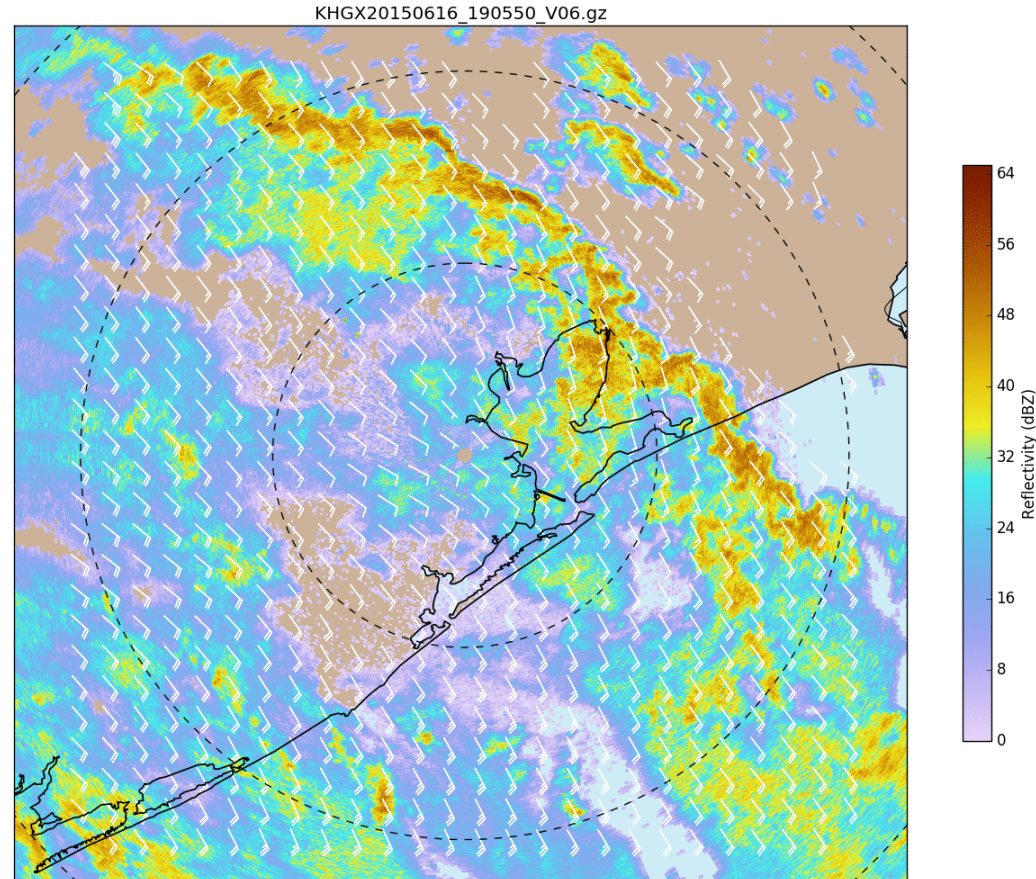


In this short update talk, we will examine the utility of comparing scatterometer overpasses with single-Doppler wind retrievals from coastal/island radars

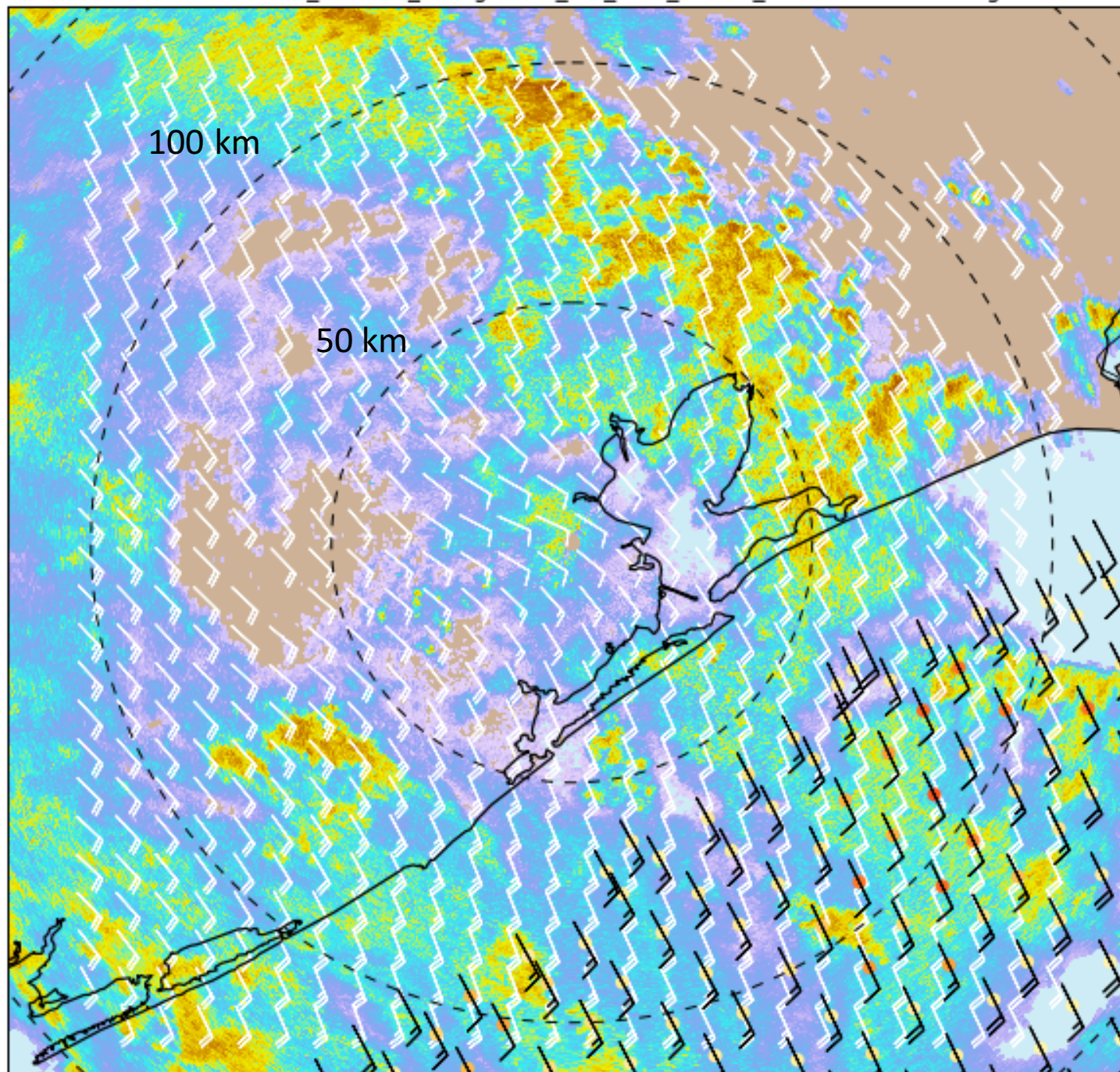


By using nearby azimuths to retrieve tangential wind, we can retrieve low-level 2D winds on the conical radar PPI “surface”

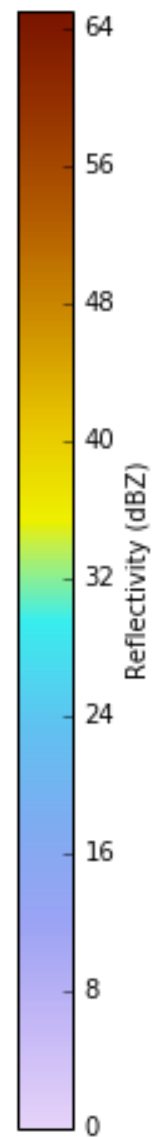
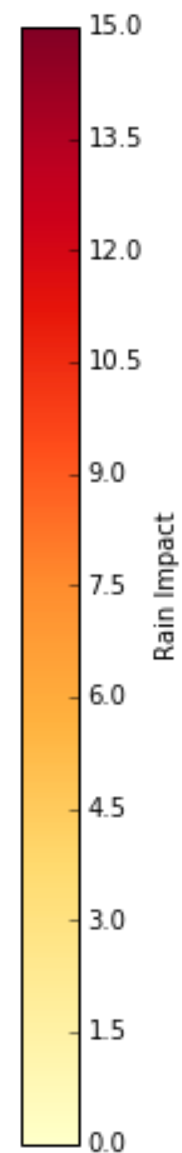
So how does this compare with a scatterometer?  
Let's test this with a boring case to start.



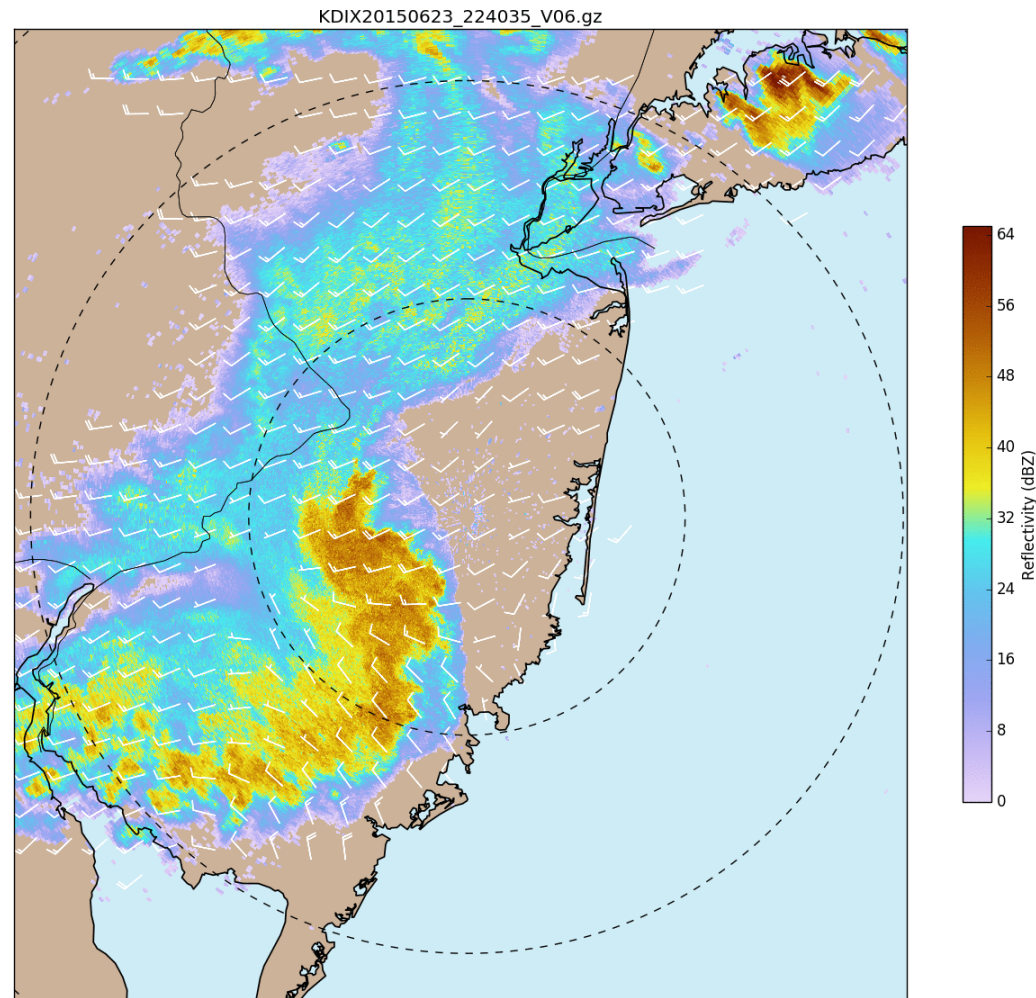




SingleDop = White  
RapidScat = Black

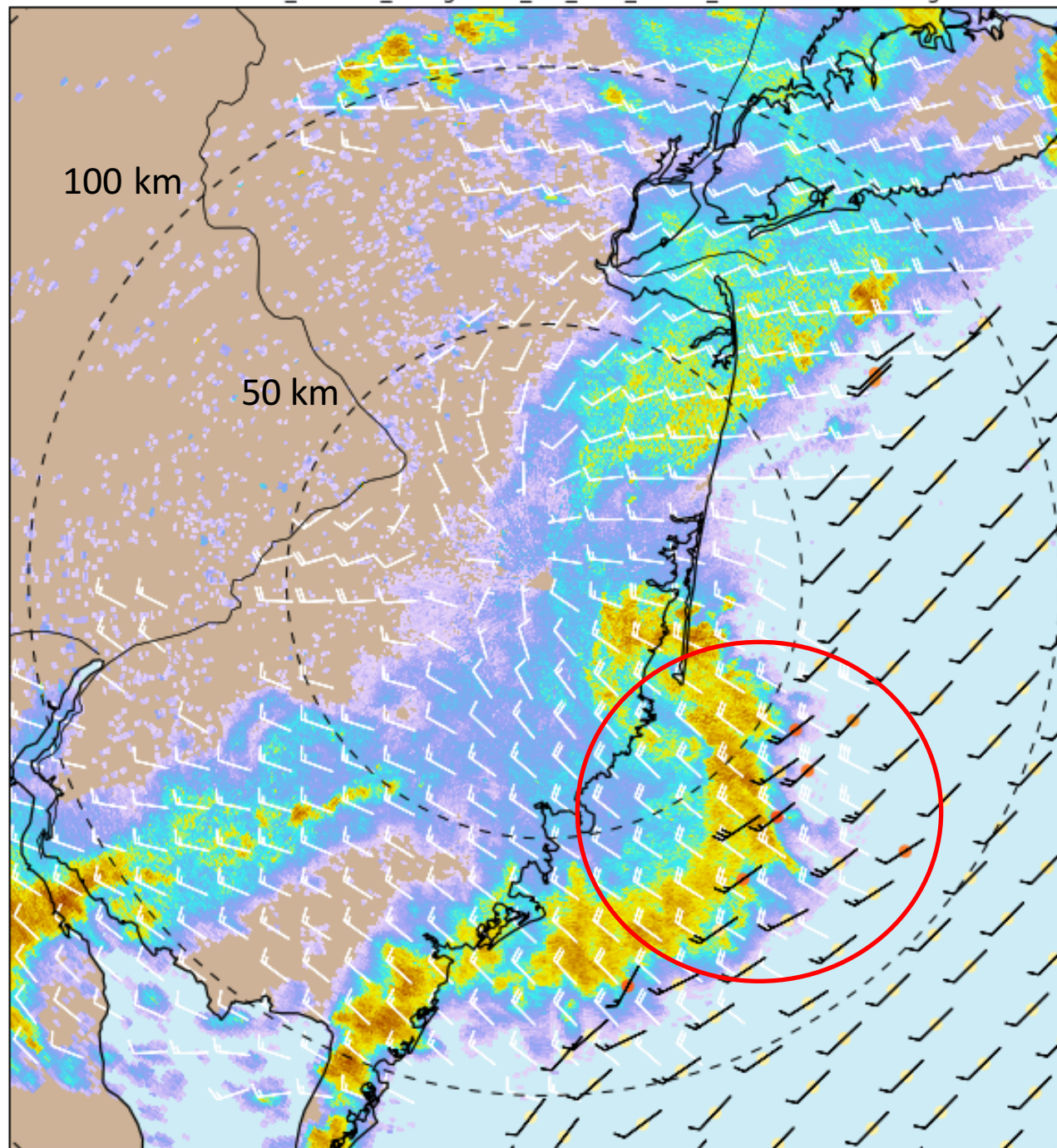


What about something a bit more dynamic?

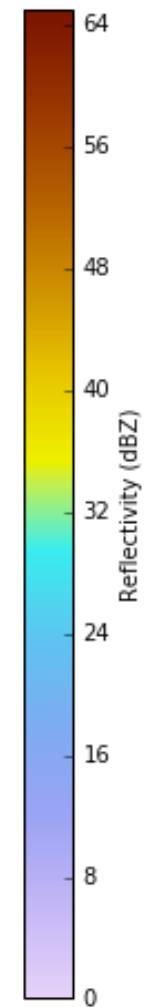
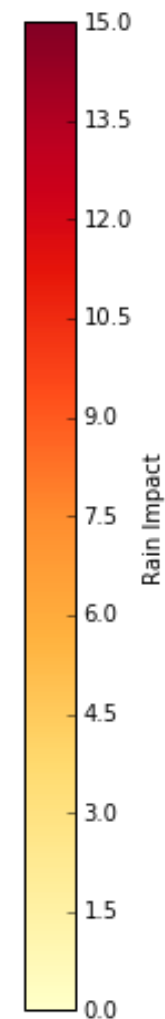


Offshore bow-echo system, anyone?





SingleDop = White  
RapidScat = Black

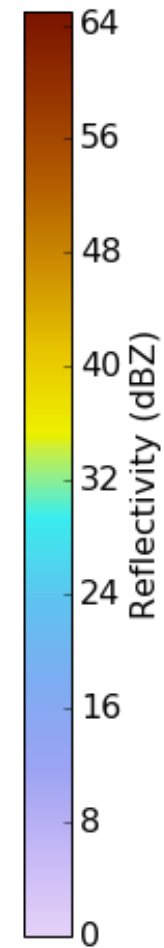
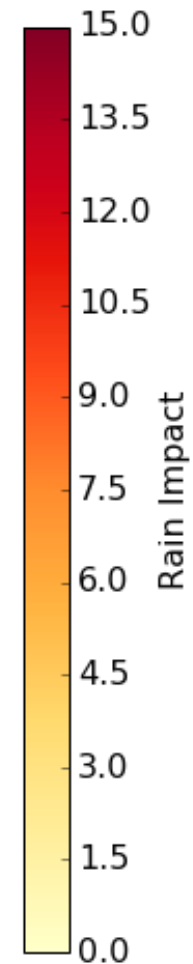
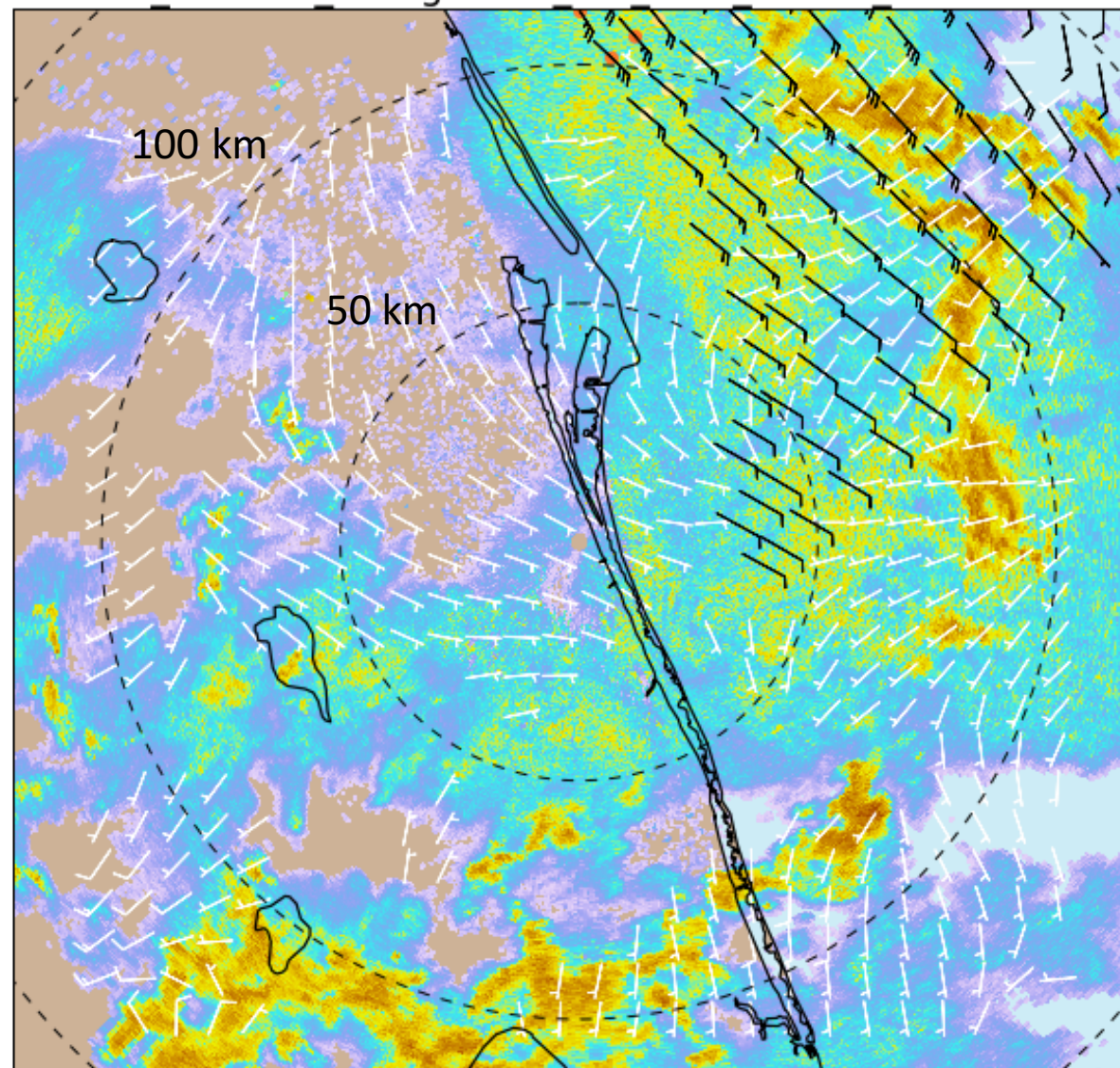
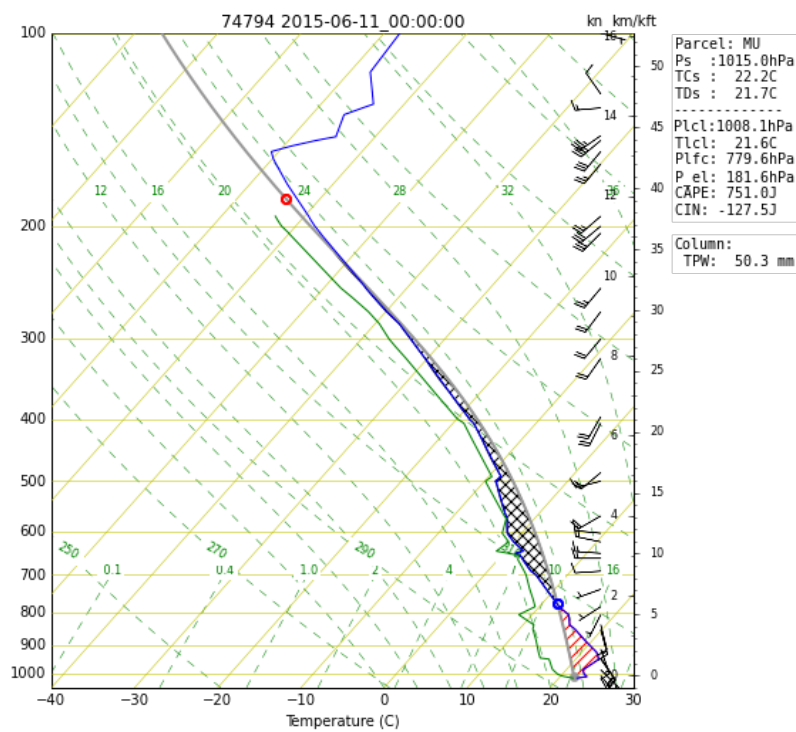




SingleDop = White  
RapidScat = Black

KMLB20150610 215007 V06.gz & rs l2b v1.1 04049 201506230020.nc.gz

Complementary  
Information!





## Putting it all together

Let's take a brief look at last fall's South Carolina flood, from the offshore perspective.

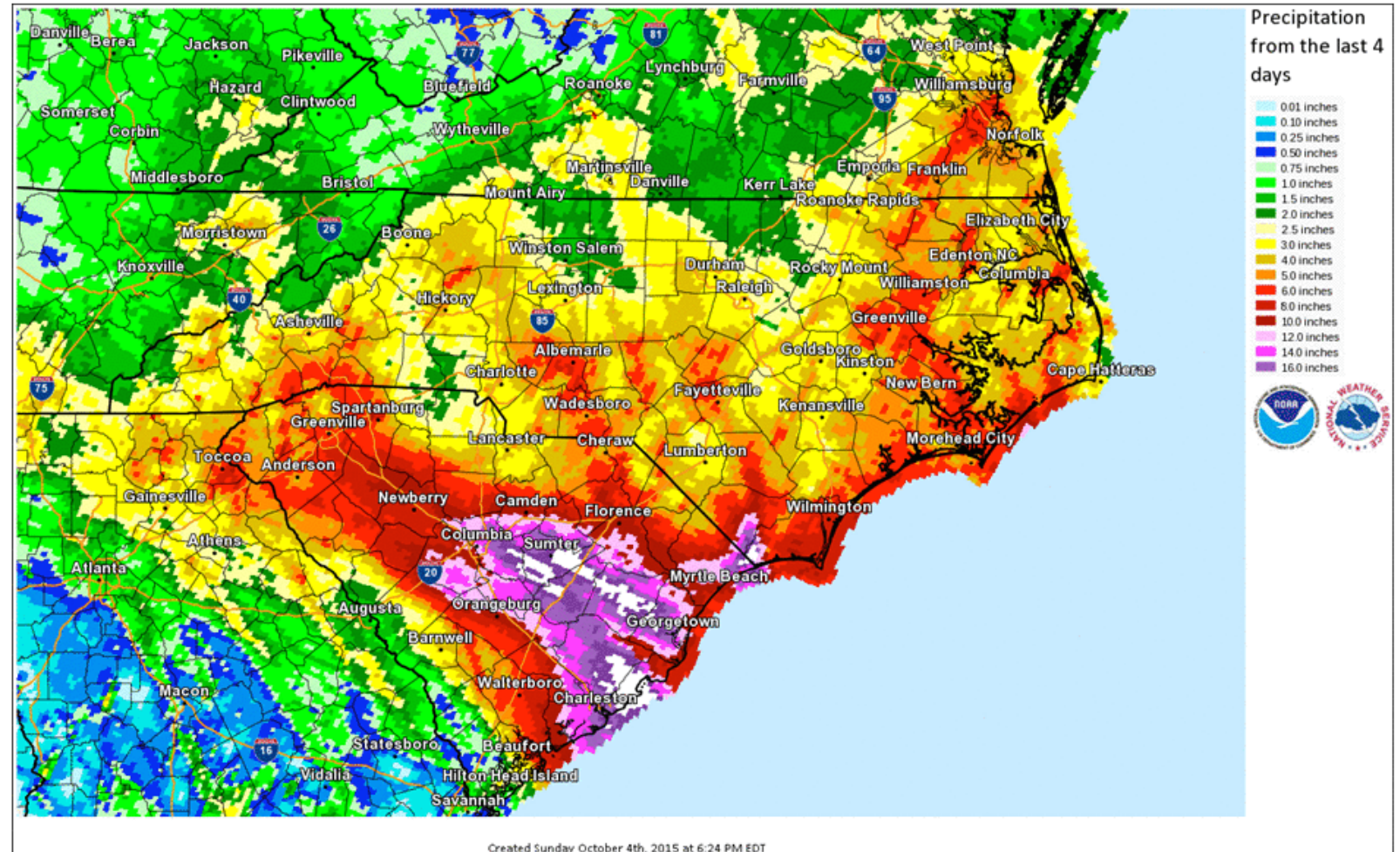
### Radars

KLTX (Wilmington) and  
KCLX (Charleston)

### Scatterometers

RapidScat, ASCAT-A, and  
ASCAT-B

## *Rainfall from the last 4 days*



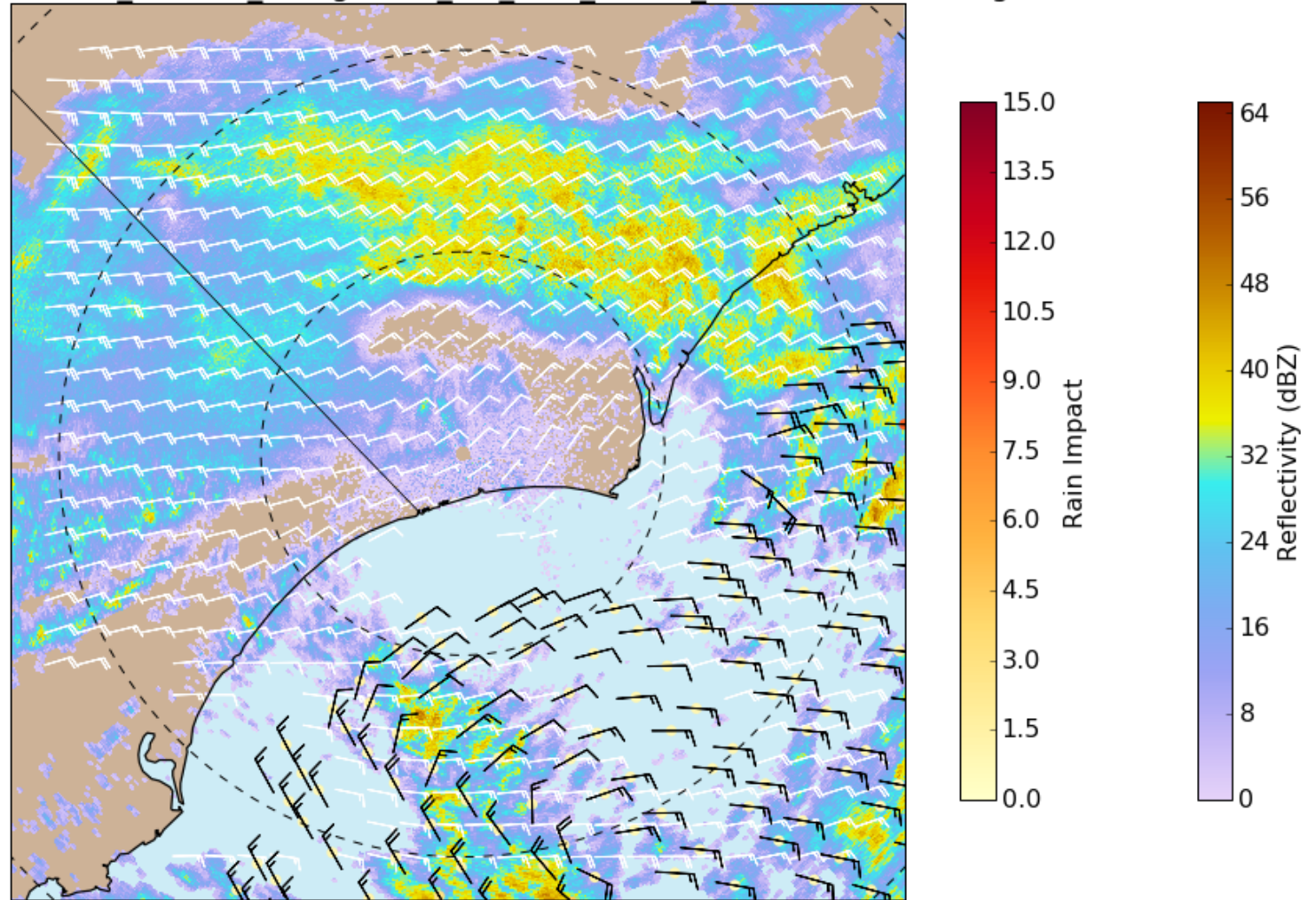
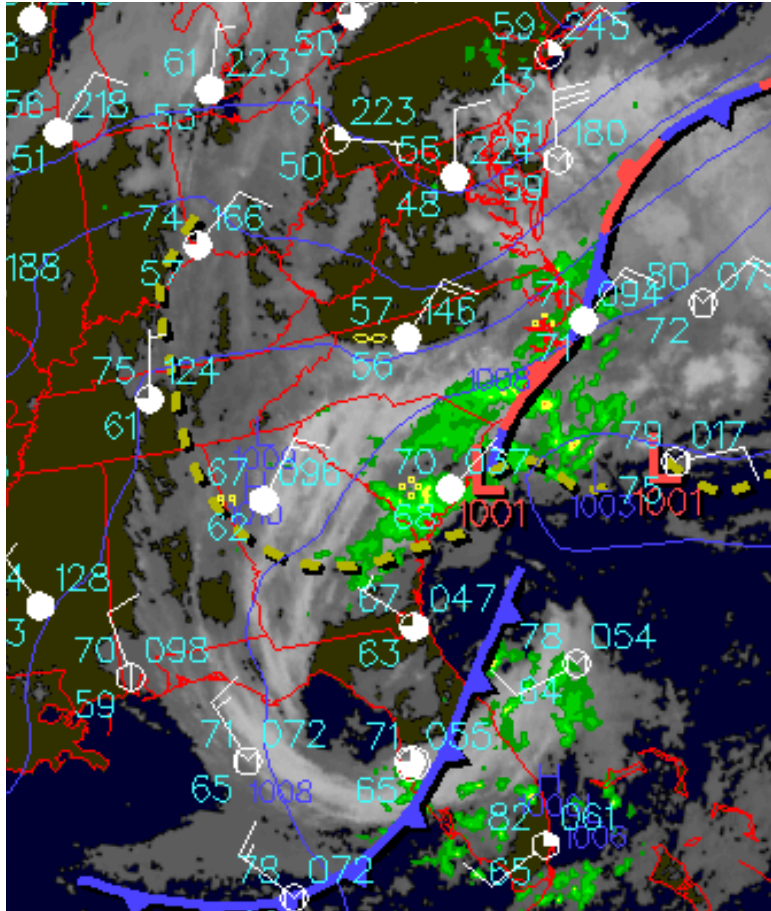
Published on: 10/04/2015 at 6:29PM



RapidScat = Black

10/04/2015, 2319 UTC

KLTX20151004\_231922\_V06.gz & rs\_l2b\_v1.1\_05855\_201510050540.nc.gz

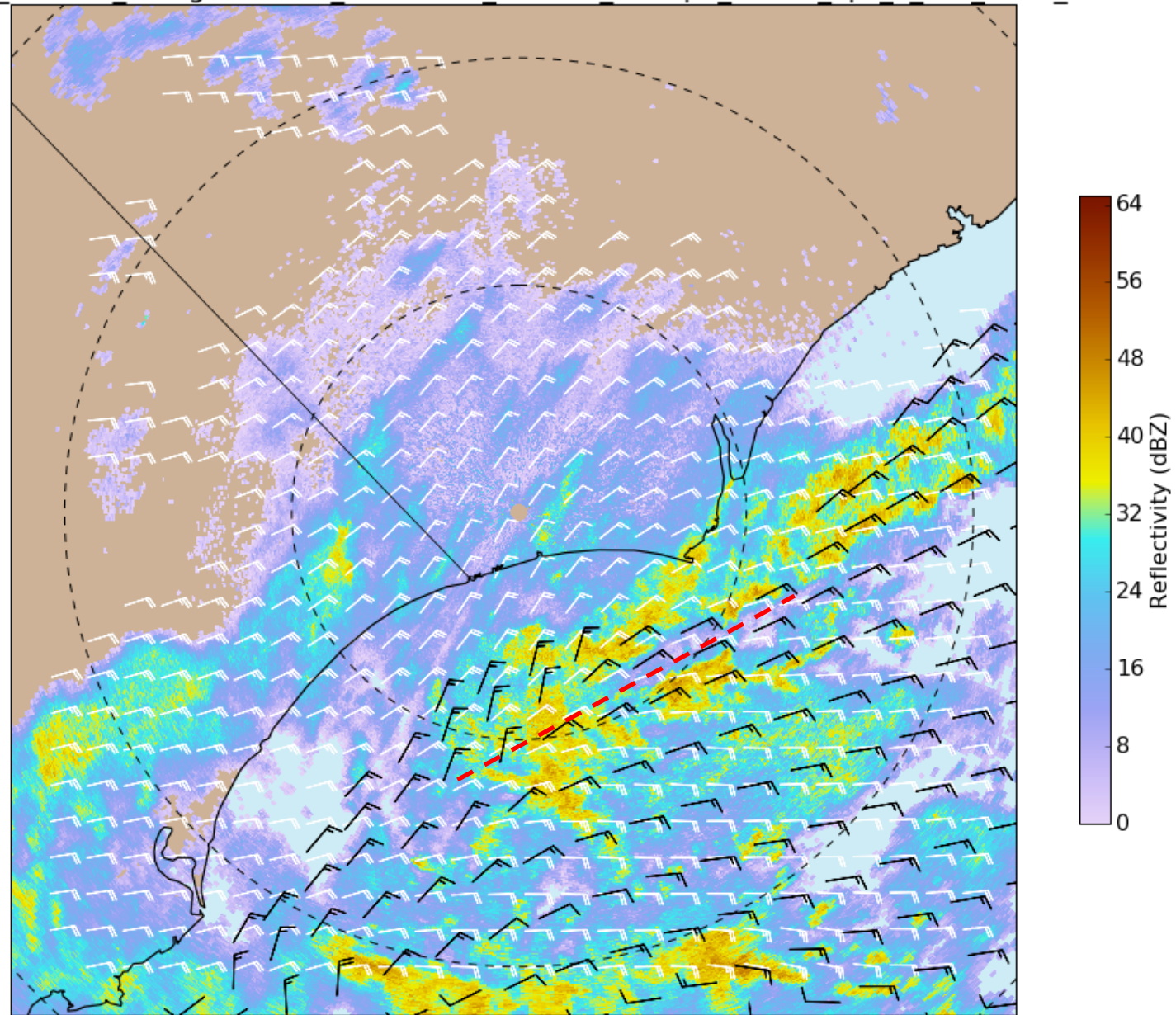




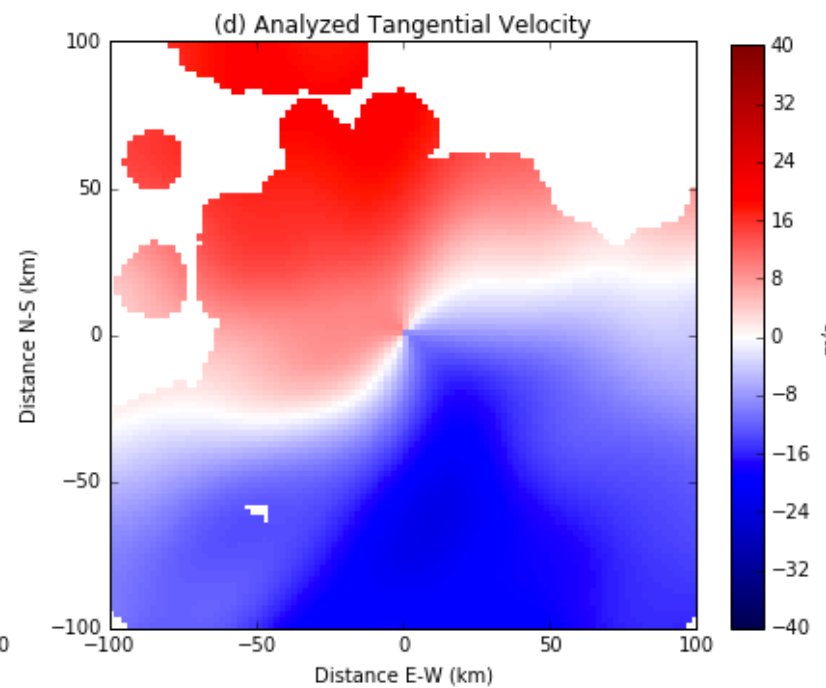
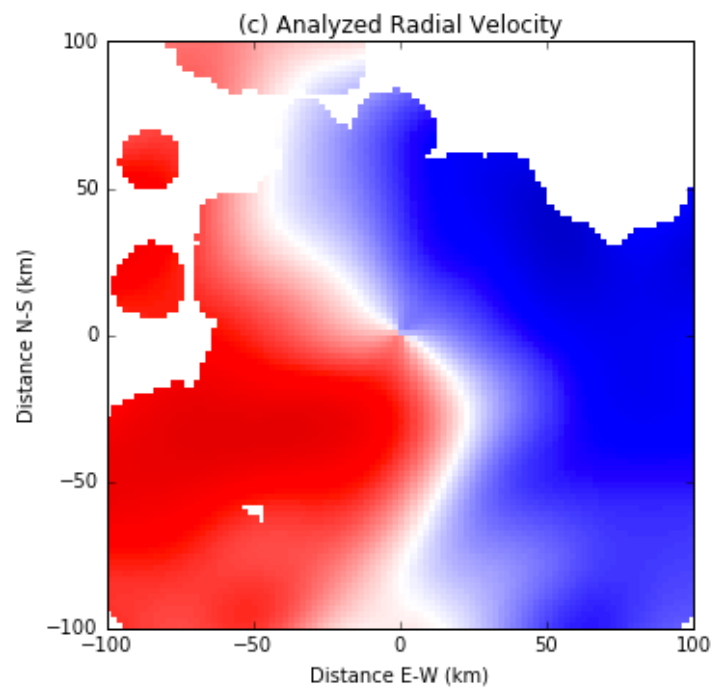
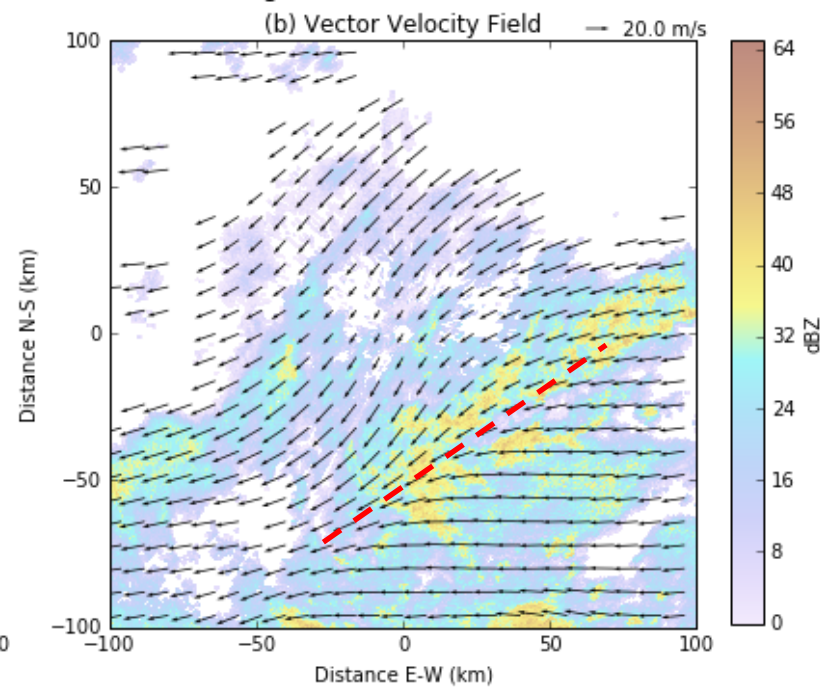
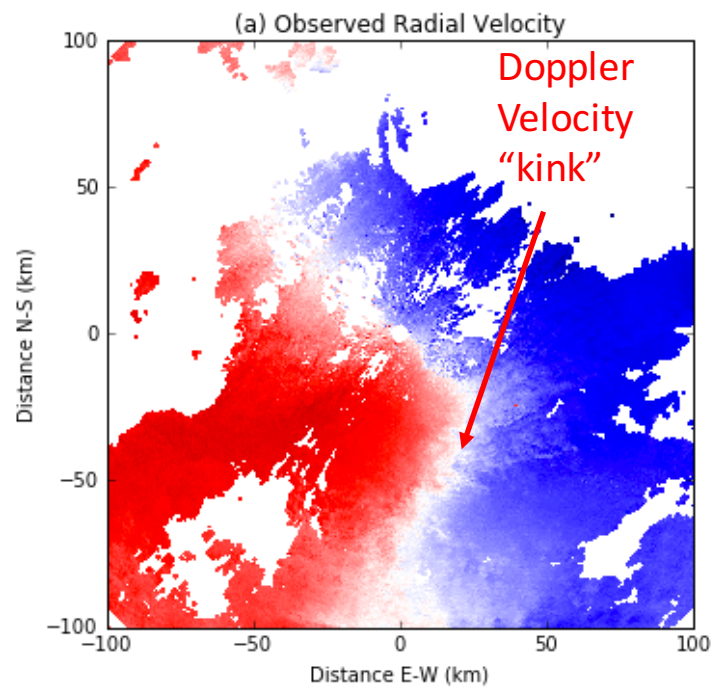
KLTX20151005\_014831\_V06.gz & ascat\_20151005\_014500\_metopb\_15804\_eps\_o\_coa\_2201\_ovw.l2.nc.gz

10/05/2015, 0148 UTC

SingleDop = White  
ASCAT-B = Black

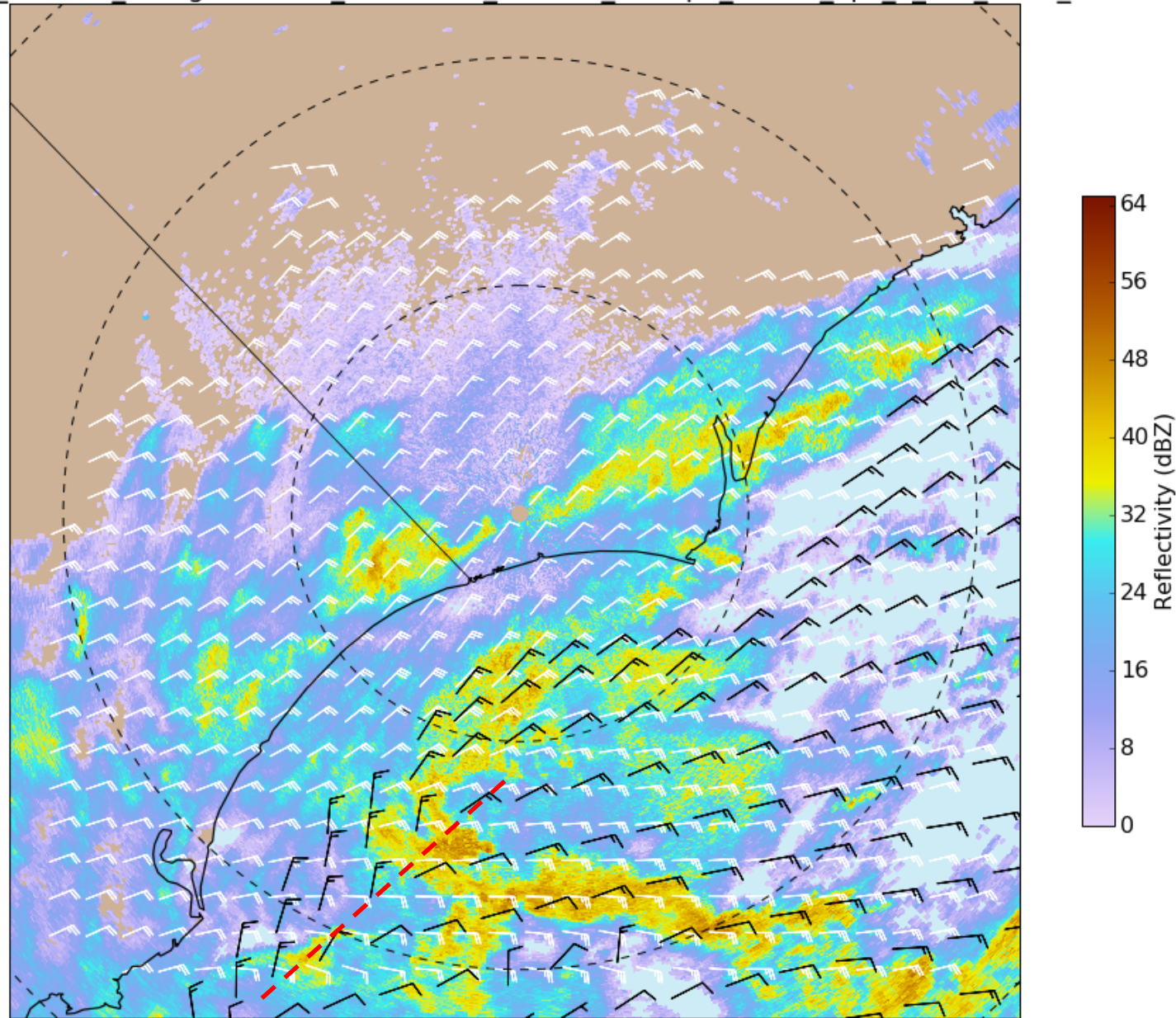






10/05/2015, 0236 UTC

SingleDop = White  
ASCAT-A = Black

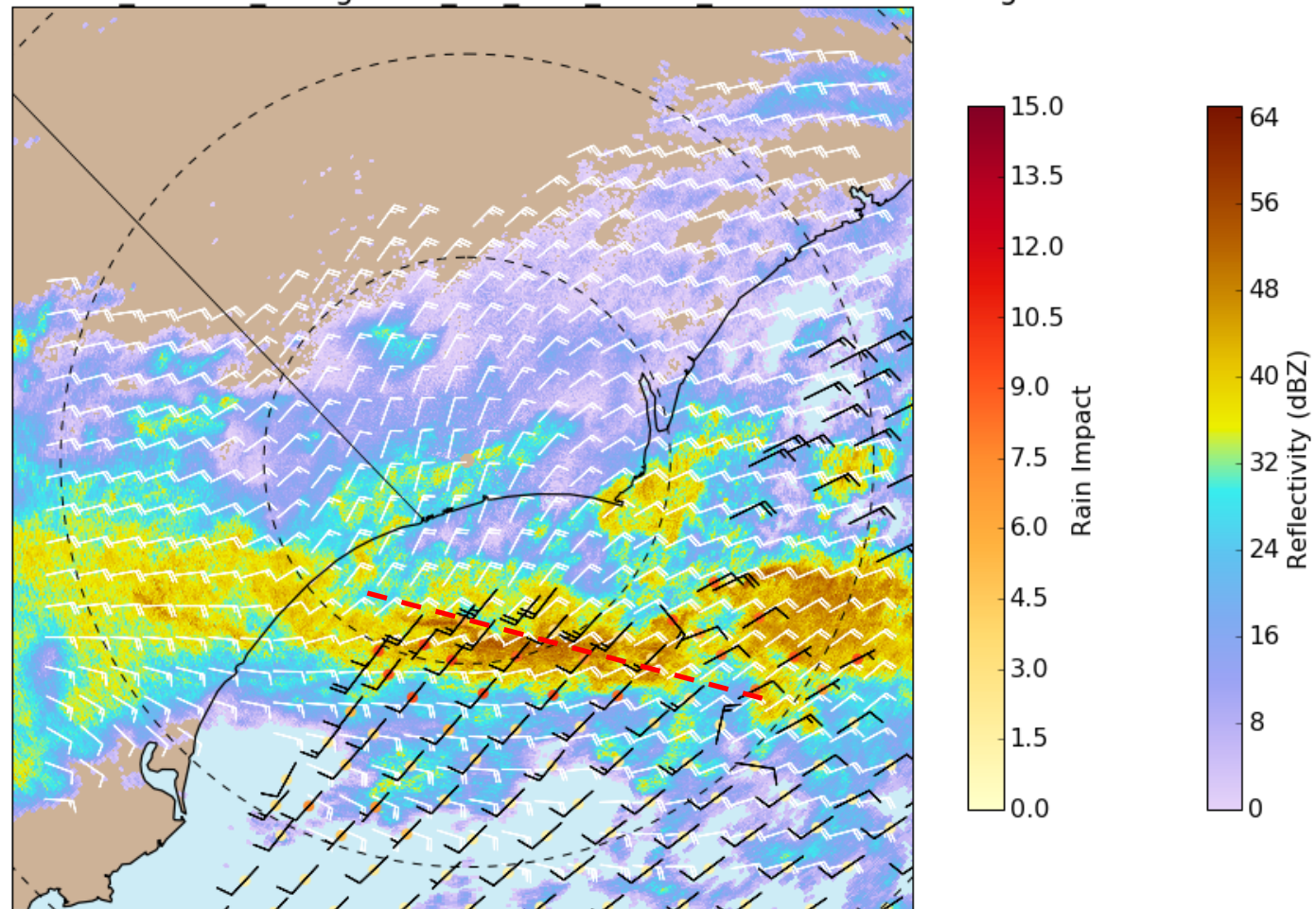
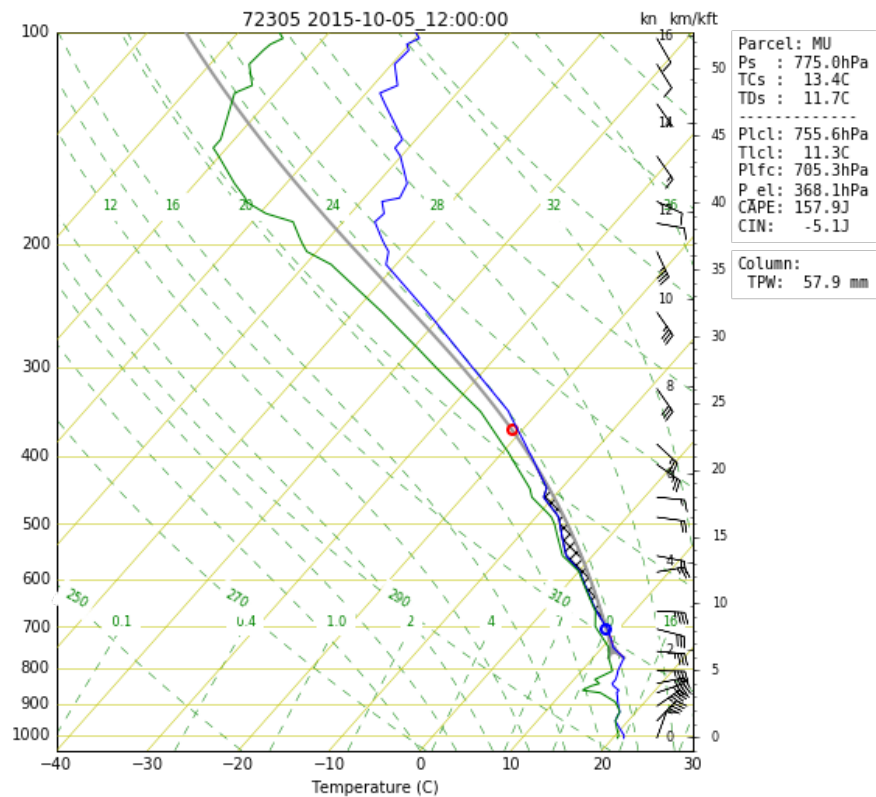




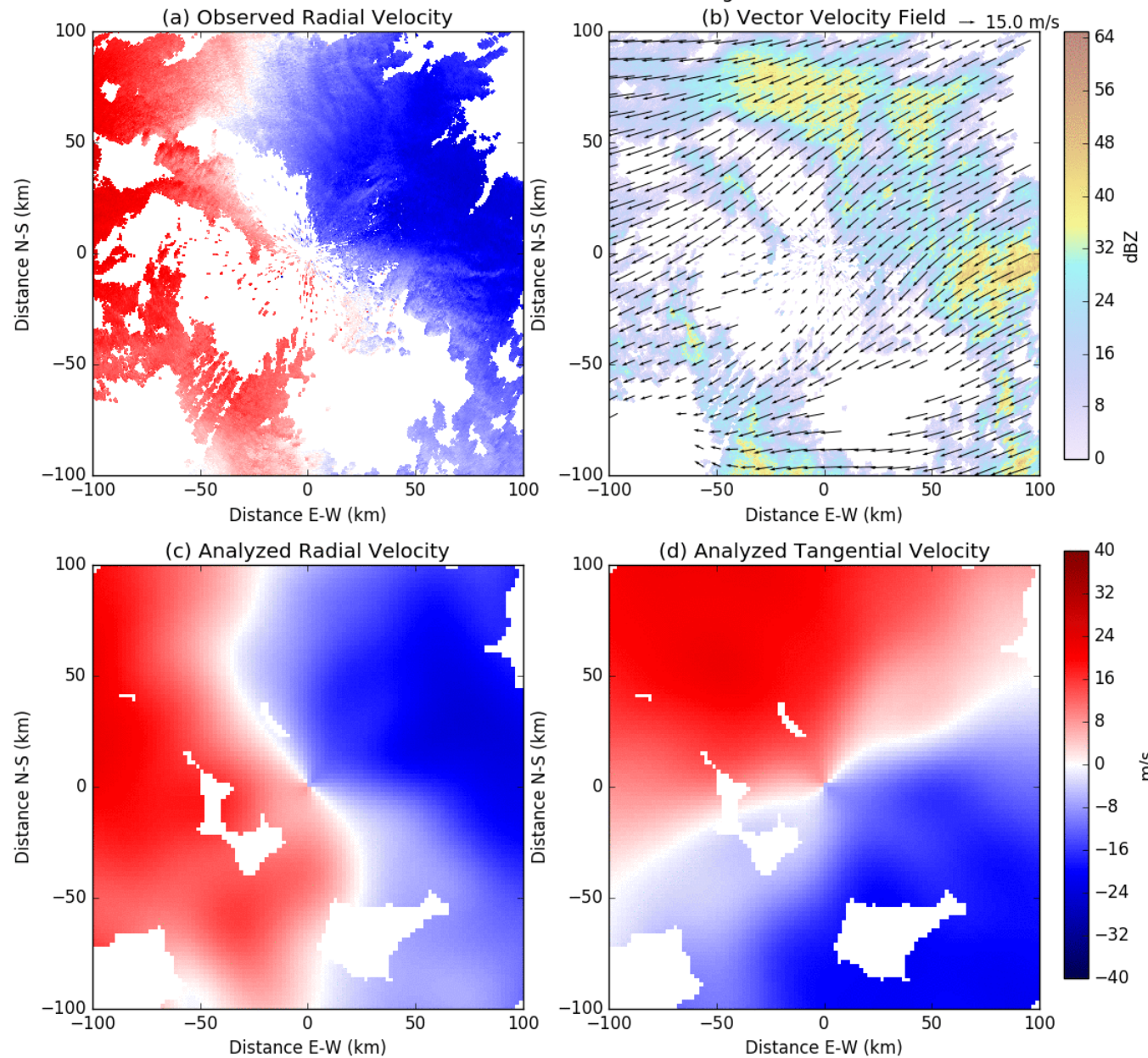
SingleDop = White  
RapidScat = Black

10/05/2015, 0727 UTC

KLTX20151005\_072702\_V06.gz & rs\_l2b\_v1.1\_05860\_201510051321.nc.gz



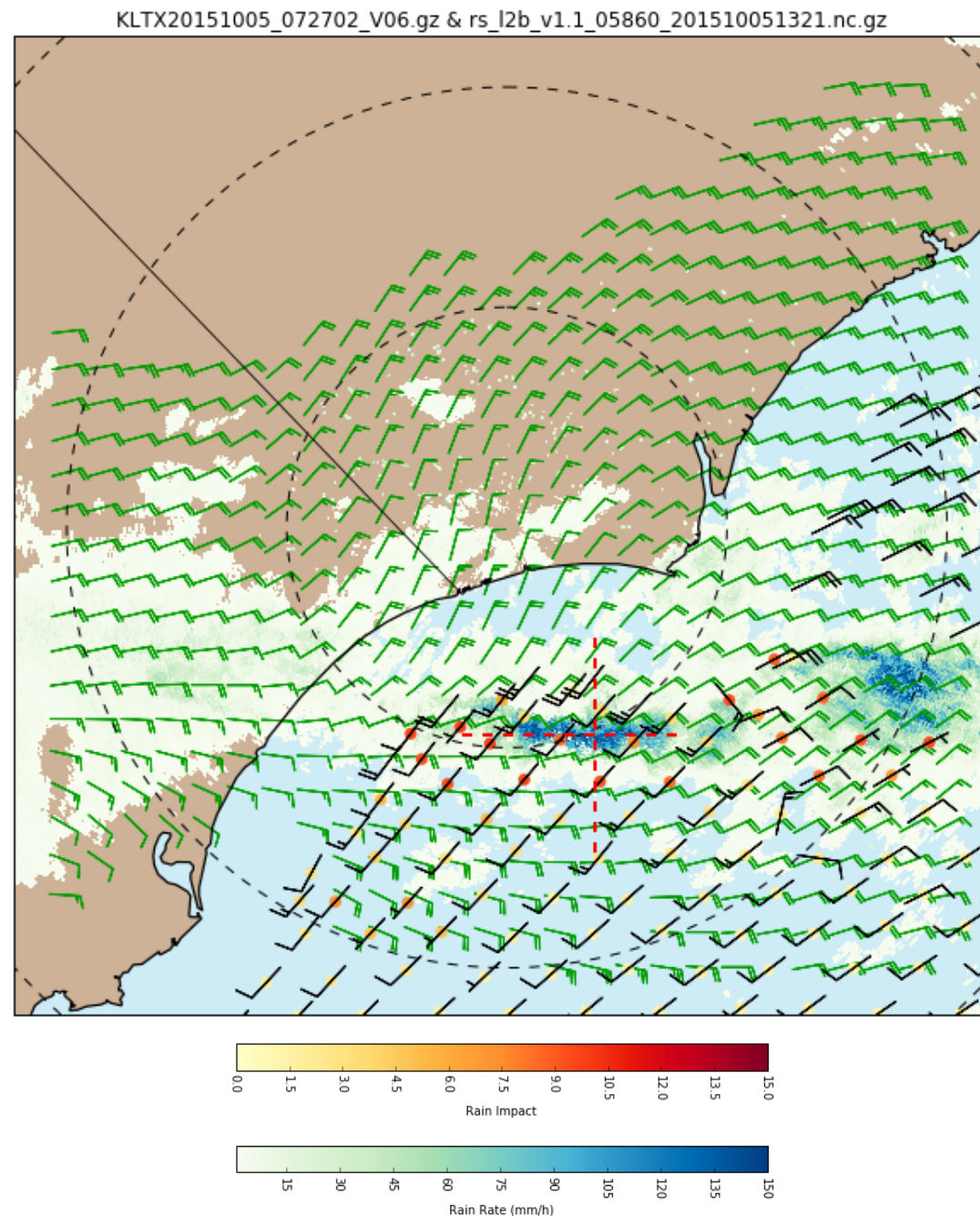
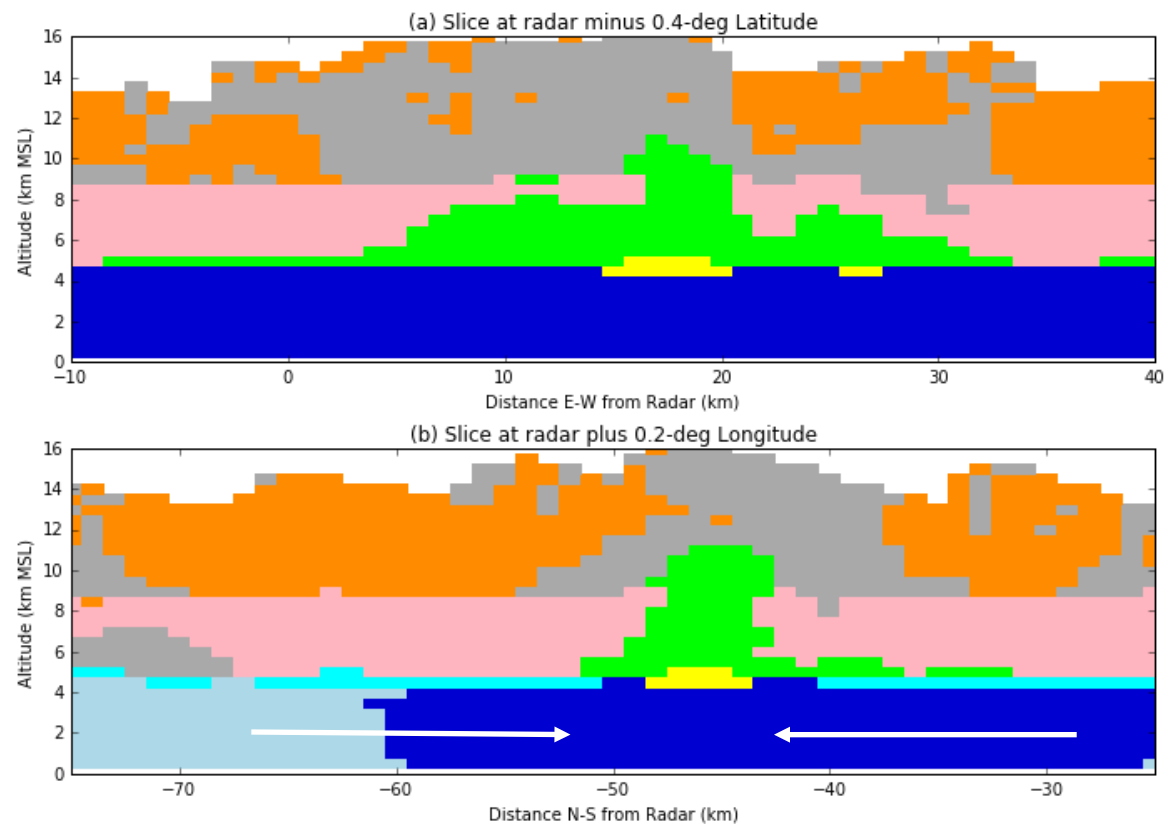
KLTX 2015-10-05T00:04:53Z 0.5 deg



KLTX  
00-08 UTC  
10/05/2016



# Blending in rainfall and microphysical information from polarimetric radar ...



## Conclusions

- Single-Doppler wind retrievals demonstrate value for evaluating scatterometer wind measurements near precipitation, and as a complementary source of wind information in concert with scatterometers
- Caveats must be kept in mind – scatterometer rain impacts, 10-m winds vs. 2D winds on conical PPI surface
- Examples demonstrate that scatterometers may be used to characterize mesoscale wind features that are helping organize precipitation systems, but proceed with caution!
- Multi-decade NEXRAD dataset now on Amazon Web Services, multi-year scatterometer data on OPeNDAP @ PO.DAAC. Hmm ...